



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/730,746	12/07/2003	Gueorgui H. Stantchev	CYGNUS.0100	2659
39602 7590 05/31/2007 NOBLITT & GILMORE, LLC. 4800 NORTH SCOTTSDALE ROAD SUITE 6000 SCOTTSDALE, AZ 85251			EXAMINER TABATABAI, ABOLFAZL	
			ART UNIT 2624	PAPER NUMBER
			MAIL DATE 05/31/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/730,746	STANTCHEV ET AL.	
	Examiner	Art Unit	
	Abolfazl Tabatabai	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 August 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-54 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-54 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 August 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|----------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>4/23/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1, 7-16, 27-35, 37, 38 and 46-54 are rejected under 35 U.S.C. 102(e) as being anticipated by Spoonhower et al (U.S. 7,057,639 B2).

Regarding claim 1, Spoonhower discloses a dental imaging system for providing image data relating to a dental target, comprising:

a sensor configured to generate the image data relating to the target (fig. 1, element 50 and column 5, lines 41-48); and,

a base unit connected to the sensor and configured to receive the image data from the sensor (fig. 2, element 14 and column 3, lines 56-60).

Regarding claim 7, Spoonhower discloses a dental imaging system according to claim 1, wherein the sensor is configured to generate a full motion video signal (column 7, lines 61-62).

Regarding claim 8, Spoonhower discloses a dental imaging system according to claim 7, wherein the sensor includes a video processor (see abstract and column 2, lines 38).

Regarding claim 9, Spoonhower discloses a dental imaging system according to claim 7, wherein the base unit includes a video processor (column 3, lines 56-59).

Regarding claim 10, Spoonhower discloses a dental imaging system according to claim 7, wherein at least one of the sensor and the base unit is configured to capture a single frame in the video signal (column 5, lines 1-10).

Regarding claim 11, Spoonhower discloses a dental imaging system according to claim 10, wherein the sensor includes a freeze frame activator (column 5, line 4).

Regarding claim 12, Spoonhower discloses a dental imaging system according to claim 1, wherein at least one of the sensor and the base unit includes a network device (column 2, lines 34-38).

Regarding claim 13, Spoonhower discloses a dental imaging system according to claim 1, further comprising a connected device connected to the base unit (column 3, lines 39-41).

Regarding claim 14, Spoonhower discloses a dental imaging system according to claim 13, wherein the base unit is configured to adjust the data for use by the connected device (column 5, lines 18-22).

Regarding claim 15, Spoonhower discloses a dental imaging system according to claim 13, wherein connected device is a wireless display (column 8, lines 15-20).

Regarding claim 16, Spoonhower discloses a dental imaging system according to claim 1, wherein the base unit is connected to the sensor via a wireless connection (column 4, lines 22-30).

Regarding claim 27, Spoonhower discloses a dental imaging system base unit

Art Unit: 2624

configured to receive data from a dental sensor, comprising:

a receiving component configured to receive signals from the dental sensor (column 4, lines 31-44 and 64-67); and an external interface connected to the receiving component and configured to reformat signals from the receiving component for transmission to a connected device (column 6, lines 12-28).

Regarding claim 28, Spoonhower discloses a dental imaging system base unit according to claim 27, further comprising an image processing component connected to the receiving component for processing data the receiving component (column 4, lines 64-67).

Regarding claim 29, Spoonhower discloses a dental imaging system base unit according to claim 28, wherein the image-processing component includes a video processing component (column 4, lines 64-67).

Regarding claim 30, Spoonhower discloses a dental imaging system base unit according to claim 27, wherein the receiving component comprises a wireless receiving component (column 4, lines 31-40).

Regarding claim 31, Spoonhower discloses a dental imaging system base unit according to claim 27, wherein the external interface comprises a network device configured to communicate via a network (column 3, lines 63-67 and column 4, lines 1-4).

Regarding claim 32, Spoonhower discloses a dental imaging system base unit according to claim 27, wherein the external interface comprises a digital video interface (column 3, lines 56-60).

Regarding claim 33, Spoonhower discloses a dental imaging system base unit according to claim 27, wherein the external interface comprises a wireless transmitting system (column 6, lines 12-16).

Regarding claim 34, Spoonhower discloses a dental imaging system base unit according to claim 27, further comprising a freeze frame system connected to the receiving component (column 5, lines 1-7).

Regarding claim 35, Spoonhower discloses a dental imaging system base unit according to claim 27, further comprising a memory system connected to the receiving component (fig. 2, element 31).

Regarding claim 37, Spoonhower discloses a dental imaging system for making an image of a target, comprising:

- a sensor (fig.1, element 50), comprising:

- a light source configured to illuminate a target (fig. 2, element 42 and column 5, lines 41-45);

- a camera (fig. 1, element 12) configured to receive light from the light source via the target and generate a digital camera signal corresponding to the received light (column 6, lines 12-18); and a camera interface configured to receive the camera signal and transmit the camera signal (column 6, lines 12-18);

- a base unit connected to the sensor and configured to receive the transmitted camera signal and convert a first format of the camera signal to a second format(fig. 2, element 14 and column 2, lines 34-39); and a connected device connected to the base unit and configured to receive the camera signal from the base unit, wherein the second

Art Unit: 2624

format is a format that may be used by the connected device (column 6, lines 12-28).

Regarding claim 38, Spoonhower discloses a dental imaging system according to claim 37, wherein the connected device comprises a wireless display (column 8, line 14-20).

Claim 46 is similarly analyzed as claim 7 above.

Claim 47 is similarly analyzed as claim 8 above.

Claim 48 is similarly analyzed as claim 9 above.

Claim 49 is similarly analyzed as claim 10 above.

Claim 50 is similarly analyzed as claim 11 above.

Claim 51 is similarly analyzed as claim 12 above.

Claim 52 is similarly analyzed as claim 16 above.

Claim 53 is similarly analyzed as claim 20 above.

Claim 54 is similarly analyzed as claim 21 above.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein

Art Unit: 2624

were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C.

4. Claims 2-6, 17-26 and 39-45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Spoonhower et al (U.S. 7,057,639 B2) in view of Mandelis et al (6,584,341 B1).

Regarding claim 2, Spoonhower discloses a dental imaging system according to claim 1, wherein the sensor comprises:

a light source (fig.1, element 42).

However, Spoonhower is silent about the specific details regarding the step of:

a diffuser proximate the light source, wherein the diffuser is configured to diffuse light from the light source.

In the same field endeavor, however, Mandelis discloses method and apparatus for detection of defects in teeth comprising the step of:

However, Spoonhower is silent about the specific details regarding the step of:

a diffuser proximate the light source, wherein the diffuser is configured to diffuse light from the light source (column 6, lines 3-7 and column 9, lines 27-31).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use a diffuser as taught by Mandelis in the system of Spoonhower because Mandelis provides Spoonhower an improved system, which is used for scanning teeth intraorally to detect caries and classify caries or to integrity of

Art Unit: 2624

the enamel or enmentum surface, to classify health integrity of the enamel at the base of occlusal fissures, to classify the health and integrity of enamel or cementum surface of the tooth and locate and characterize cracks in dentin on prepared teeth.

Regarding claim 3, Spoonhower discloses a dental imaging system according to claim 2, wherein: the light source is disposed behind a solid medium.

However, Spoonhower is silent about the specific details regarding the step of:

the diffuser is at least one of integrated into the solid medium and attached to the solid medium.

In the same field endeavor, however, Mandelis discloses method and apparatus for detection of defects in teeth comprising the step of:

the diffuser is at least one of integrated into the solid medium and attached to the solid medium (column 10, lines 15-24).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use a diffuser as taught by Mandelis in the system of Spoonhower because Mandelis provides Spoonhower an improved system, which is used for scanning teeth intraorally to detect caries and classify caries or to integrity of the enamel or enmentum surface, to classify health integrity of the enamel at the base of occlusal fissures, to classify the health and integrity of enamel or cementum surface of the tooth and locate and characterize cracks in dentin on prepared teeth.

Regarding claim 4, Spoonhower is silent about the specific details regarding a dental imaging system according to claim 3, wherein the diffuser includes a roughened surface of the solid medium.

Art Unit: 2624

In the same field endeavor, however, Mandelis discloses method and apparatus for detection of defects in teeth comprises the diffuser includes a roughened surface of the solid medium (column 10, lines 52-61).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use a roughened surface as taught by Mandelis in the system of Spoonhower because Mandelis provides Spoonhower an improved system, which is used for scanning teeth intraorally to detect caries and classify caries or to integrity of the enamel or enmentum surface, to classify health integrity of the enamel at the base of occlusal fissures, to classify the health and integrity of enamel or cementum surface of the tooth and locate and characterize cracks in dentin on prepared teeth.

Claim 5 is similarly analyzed as claim 2 above.

Regarding claim 6, Spoonhower is silent about the specific details regarding a dental imaging system according to claim 1, further comprising at least one substantially white LED.

In the same field endeavor, however, Mandelis discloses method and apparatus for detection of defects in teeth comprises at least one substantially white LED (column 7, lines 8-12).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use a white LED as taught by Mandelis in the system of Spoonhower because Mandelis provides Spoonhower an improved system, which is used for scanning teeth intraorally to detect caries and classify caries or to integrity of the enamel or enmentum surface, to classify health integrity of the enamel at the base

Art Unit: 2624

of occlusal fissures, to classify the health and integrity of enamel or cementum surface of the tooth and locate and characterize cracks in dentin on prepared teeth.

Regarding claim 17, Spoonhower discloses a sensor (fig. 1, element 50), comprising:

a camera (fig.1, element 12); and a light source (fig, 2, element 42).

However, Spoonhower is silent about the specific details regarding the step of:

an LED configured to provide light along a light path to the camera; and a diffuser interposed along the light path.

In the same field endeavor, however, Mandelis discloses method and apparatus for detection of defects in teeth comprising the step of:

an LED configured to provide light along a light path to the camera (column 7, lines 8-12); and a diffuser interposed along the light path (column 6, lines 3-7 and column 9, lines 27-31).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use an LED as taught by Mandelis in the system of

Spoonhower because Mandelis provides Spoonhower an improved system, which is used for scanning teeth intraorally to detect caries and classify caries or to integrity of the enamel or enmentum surface, to classify health integrity of the enamel at the base of occlusal fissures, to classify the health and integrity of enamel or cementum surface of the tooth and locate and characterize cracks in dentin on prepared teeth.

Regarding claim 18, Spoonhower is silent about the specific details regarding a sensor according to claim 17, wherein the sensor further comprises a housing defining a

Art Unit: 2624

cavity, wherein the LED is disposed within the cavity, and wherein the diffuser covers the cavity in the housing.

In the same field endeavor, however, Mandelis discloses method and apparatus for detection of defects in teeth comprises the sensor further comprises a housing defining a cavity, wherein the LED is disposed within the cavity, and wherein the diffuser covers the cavity in the housing (column 7, lines 8-12 and column 10, lines 52-61).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use a housing defining a cavity as taught by Mandelis in the system of Spoonhower because Mandelis provides Spoonhower an improved system, which is used for scanning teeth intraorally to detect caries and classify caries or to integrity of the enamel or enmentum surface, to classify health integrity of the enamel at the base of occlusal fissures, to classify the health and integrity of enamel or cementum surface of the tooth and locate and characterize cracks in dentin on prepared teeth.

Claim 19 is similarly analyzed as claim 4 above.

Regarding claim 20, Spoonhower discloses a sensor according to claim 17, wherein the sensor further includes a wireless interface connected to the camera and configured to transmit information from the camera (column 6, lines 12-16).

Regarding claim 21, Spoonhower discloses sensor according to claim 20, wherein the wireless interface is detachable from the camera (column 21, lines 12-16).

Regarding claim 22, Spoonhower discloses a sensor according to claim 17, further comprising a base unit configured to receive signals from the camera (column 4, lines 31-35 and column 5, lines 7-12).

Art Unit: 2624

Claim 23 is similarly analyzed as claim 6 above.

Regarding claim 24, Spoonhower discloses a sensor according to claim 17, further comprising a video processor connected to the camera (column 4, lines 64-67).

Regarding claim 25, Spoonhower discloses a sensor according to claim 24, further comprising a freeze frame activator (column 5, lines 1-7).

Regarding claim 26, Spoonhower discloses a sensor according to claim 17, further comprising a network device connected to the camera (column 3, lines 39-41).

Claim 39 is similarly analyzed as claim 6 above.

Claim 40 is similarly analyzed as claim 2 above.

Claim 41 is similarly analyzed as claim 19 above.

Claim 42 is similarly analyzed as claim 3 above.

Claim 43 is similarly analyzed as claim 4 above.

Claim 44 is similarly analyzed as claim 5 above.

Claim 45 is similarly analyzed as claim 18 above.

5. Claim 36 is rejected under 35 U.S.C. 103(a) as being unpatentable over Spoonhower et al (U.S. 7,057,639 B2) and Mandelis et al (6,584,341 B1) as applied to claim 27 above, and further in view of Kara (U. S. 088,695).

Regarding claim 36, Spoonhower and Mandelis are silent about the specific details regarding a dental imaging system base unit according to claim 27, further comprising an audio system configured to receive and store audio information. In the same field endeavor, however, Kara discloses system and method for communicating medical records using bar coding comprises an audio system

Art Unit: 2624

configured to receive and store audio information (column 6, lines 7-11).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use an audio system as taught by Kara in the system of Spoonhower because Kara provides Spoonhower an improved system for storing and communicating whereby such records can be stored in a secure fascine and communicated from one location to another in a private manner and with a minimum of a risk from error.

Other Prior Art Cited

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Tamburrino et al (U. S. 5,512,036) disclose dental imaging system.

Peithman (U. S. 5,487,661) disclose portable dental camera and system.

Kipke et al (U. S. 5,487,662) disclose dental impression tray for photo curable impression material.

Contact Information

7. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to ABOLFAZL TABATABAI whose telephone number is (571) 272-7458.

The Examiner can normally be reached on Monday through Friday from 9:30 a.m. to 7:30 p.m. If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Bhavesh Mehta, can be reached at (571) 272-7453. The fax phone number for organization where this application or proceeding is assigned is (571) 273-8300.

Art Unit: 2624

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

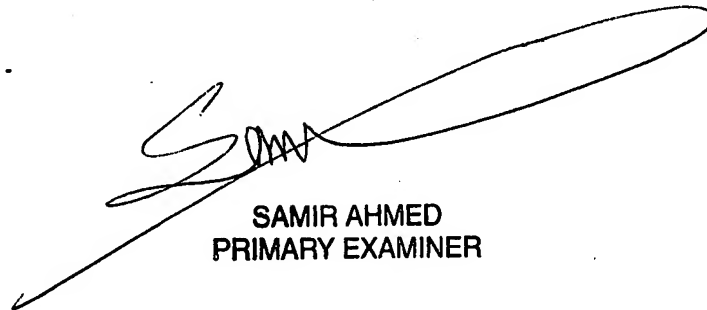
Abolfazl Tabatabai

Patent Examiner

Technology Division 2624

May 16, 2007

A-Tabatabai



SAMIR AHMED
PRIMARY EXAMINER